102-002 Maintenance Schedule

Maintenance Check

ISC Engines

Perform maintenance at whichever interval occurs first.

At each scheduled maintenance interval, perform all previous maintenance checks that are due for scheduled maintenance.

Maintenance Procedures at Daily Interval

- Air Intake Piping - Check
- Fan, Cooling - Check
- Crankcase Breather Tube - Check
- Air Tanks and Reservoirs - Check
- Coolant Level - Check
- Fuel-Water Separator - Drain
- Lubricating Oil Level - Check
- Aftertreatment Exhaust Piping - Check

Maintenance Procedures at 12,000 Kilometers [7,500 Miles], 250 Hours, or 3 Months

- Air Cleaner Restriction - Check
- Charge Air Piping - Check
- Charge Air Cooler - Check

Maintenance Procedures at 24,000 Kilometers [15,000 Miles], 500 Hours, or 6 Months

- Fuel Filter (Spin-on Type) - Change[7]
- Lubricating Oil System - Drain[1]
- Lubricating Oil Filter (Spin On) - Change[1]
- Supplemental Coolant Additive (SCA) and Antifreeze Concentration - Check[2]
- Coolant Filter - Change
- Batteries - Check[4]
- Battery Cables and Connections - Check[4]
- Radiator Pressure Cap - Check

Maintenance Procedures at 48,000 Kilometers [30,000 Miles], 1000 Hours, or 1 Year

- Drive Belt, Cooling Fan - Check
- Belt Tensioner, Automatic (Water Pump) - Check

Maintenance Procedures at 96,000 Kilometers [60,000 Miles], 2000 Hours, or 2 Years

- Cooling System - Flush[2, 8]
- Vibration Damper, Rubber - Check
- Vibration Damper, Viscous - Check[3]
- Engine Steam Cleaning - Clean
- Radiator Hoses - Check
- Air Compressor Discharge Lines - Clean
- Crankcase Breather Element - Change

Maintenance Procedures at 241,500 Kilometers [150,000 Miles], 5000 Hours, or 4 Years

- Overhead Set - Adjust[5]
- Engine Brake Assembly - Adjust[4]

Every 321,500 Kilometers [200,000 Miles] or 6500 Hours

- Aftertreatment Diesel Particulate Filter - Clean[6]

1. The lubricating oil and lubricating oil filter interval can be adjusted based on application, fuel consumption, gross vehicle weight, and idle time. See the Oil Drain Intervals table in this procedure.
2. Service interval is every oil change or 24,000 kilometers [15,000 miles], 500 hours, or 6 months, whichever occurs first. A heavy-duty year-round antifreeze that meets the chemical composition of ASTM D6210 **must** be used. The change interval is 2 years or 385,000 kilometers [240,000 miles], whichever occurs first. Antifreeze is essential for freeze, overheat, and corrosion protection. SCA is essential for liner pitting and scaling protection.
3. Service interval is 2 years or 385,000 kilometers [240,000 miles], whichever occurs first.
4. Follow the manufacturers' recommended maintenance procedures for the starter, alternator, batteries, electrical components, engine brake, exhaust brake, charge air cooler, radiator, air compressor, air cleaner, refrigerant compressor, and fan clutch.
5. Reset the valve lash, if needed, to nominal specifications. Refer to Procedure 018-015 in Section V.
6. The aftertreatment diesel particulate filter clean/replace interval is based on the use of lubricating oils that meet the Cummins® Engineering Standard (C.E.S.) 20081 oil specification. If a non-low ash lubricating oil meeting the American Petroleum Institute (API) performance classification CI-4/SL and/or C.E.S. 20078 is used, the service intervals for the aftertreatment systems will be reduced to 241,000 kilometers [150,000 Miles] or 5000 hours.
7. Replace the suction side and the pressure side at the same time.
8. This cooling system requirement to flush at this scheduled maintenance includes: drain, flush, and fill.

All low emission EPA 07, EPA 10, EPA Tier 4 Interim/European Union Stage IIIB 2011(174 -751 hp) engine systems equipped with exhaust aftertreatment **must** operate on ultra-low sulfur diesel (ULSD) with a maximum sulfur content of 15 ppm in the United States and 10 ppm in the

European Union. Failure to do so can permanently damage engine and aftertreatment systems within a short period of time. This damage could cause the engine to become inoperable and affect the warranty coverage on the engine system.

ISL Engines

Perform maintenance at whichever interval occurs first.

At each scheduled maintenance interval, perform all previous maintenance checks that are due for scheduled maintenance.

Maintenance Procedures at Daily Interval

- Air Intake Piping - Check
- Fan, Cooling - Check
- Crankcase Breather Tube - Check
- Air Tanks and Reservoirs - Check
- Coolant Level - Check
- Fuel-Water Separator - Drain
- Lubricating Oil Level - Check
- Aftertreatment Exhaust Piping - Check

Maintenance Procedures at 16,000 Kilometers [10,000 Miles], 250 Hours, or 3 Months

- Air Cleaner Restriction - Check
- Charge Air Piping - Check
- Charge Air Cooler - Check

Maintenance Procedures at 32,000 Kilometers [20,000 Miles], 500 Hours, or 6 Months

- Fuel Filter (Spin-On Type) - Change[7]
- Lubricating Oil System - Change[1]
- Lubricating Oil Filter (Spin On) - Change[1]
- Supplemental Coolant Additive (SCA) and Antifreeze Concentration - Check[2]
- Coolant Filter - Change
- Batteries - Check[4]
- Battery Cables and Connections - Check[4]
- Radiator Pressure Cap - Check

Maintenance Procedures at 64,000 Kilometers [40,000 Miles], 1000 Hours, or 1 Year

- Drive Belt, Cooling Fan - Check
- Belt Tensioner, Automatic (Water Pump) - Check

Maintenance Procedures at 128,000 Kilometers [80,000 Miles], 2000 Hours, or 2 Years

- Cooling System - Flush[2, 8]
- Vibration Damper, Rubber - Check
- Vibration Damper, Viscous - Check[3]
- Engine Steam Cleaning - Clean

- Radiator Hoses - Check
- Air Compressor Discharge Lines - Clean
- Crankcase Breather Element - Replace

Maintenance Procedures at 241,500 Kilometers [150,000 Miles], 5000 Hours, or 4 Years

- Overhead Set - Adjust[5]
- Engine Brake Assembly - Adjust[4]

Maintenance Procedures at 321,500 Kilometers [200,000 Miles] or 6500 Hours

- Aftertreatment Diesel Particulate Filter - Clean[6]

1. The lubricating oil and lubricating oil filter interval can be adjusted based on application, fuel consumption, gross vehicle weight, and idle time. See the Oil Drain Intervals table in this procedure.
2. Service interval is every oil change or 24,000 kilometers [15,000 miles], 500 hours, or 6 months, whichever occurs first. A heavy-duty year-round antifreeze that meets the chemical composition of ASTM D6210 **must** be used. The change interval is 2 years or 385,000 kilometers [240,000 Miles], whichever occurs first. Antifreeze is essential for freeze, overheat, and corrosion protection. SCA is essential for liner pitting and scaling protection.
3. Service interval is 2 years or 385,000 kilometers [240,000 miles], whichever occurs first.
4. Follow the manufacturers' recommended maintenance procedures for the starter, alternator, batteries, electrical components, engine brake, exhaust brake, charge air cooler, radiator, air compressor, air cleaner, refrigerant compressor, and fan clutch.
5. Reset the valve lash, if needed, to nominal specifications. Refer to Procedure 018-015 in Section V.
6. The aftertreatment diesel particulate filter clean/replace interval is based on the use of lubricating oils that meet the Cummins® Engineering Standard (C.E.S.) 20081 oil specification. If a non-low ash lubricating oil meeting the American Petroleum Institute (API) performance classification CI-4/SL and/or C.E.S. 20078 is used, the service intervals for the aftertreatment systems will be reduced to 241,000 kilometers [150,000 miles] or 5000 hours.
7. Replace the primary (or suction side) and the secondary (or pressure side) fuel filters at the same time.
8. This cooling system requirement to flush at this scheduled maintenance includes: drain, flush, and fill.

All low emission EPA 07, EPA 10, EPA Tier 4 Interim/European Union Stage IIIB 2011(174 -751 hp) engine systems equipped with exhaust aftertreatment **must** operate on ultra-low sulfur diesel (ULSD) with a maximum sulfur content of 15 ppm in the United States and 10 ppm in the European Union. Failure to do so can permanently damage engine and aftertreatment systems within a short period of time. This damage could cause the engine to become inoperable and affect the warranty coverage on the engine system.

Oil Drain Intervals

ISC and ISL Engines

See the following flowchart to determine the maximum recommended oil change and filter change intervals in kilometers [miles], hours, or months, whichever comes first.

Is the vehicle one of those listed below?

- Delivery truck
- School bus
- Fire truck/emergency vehicle

If Yes -

Select the correct oil drain interval from Table 1.

If No -

Is the vehicle one of those listed below?

- Refuse truck
- Mixer/dumper

If Yes -

Select the correct oil drain interval from Table 2.

If No -

If the vehicle is a shuttle or transit bus, select the oil drain interval from Table 3.

If the vehicle is a recreational vehicle, or a vehicle that has **not** been listed, select the correct oil drain interval from Table 4.

Table 1: Maximum Oil Drain Intervals	
(A) Severe-Duty	(B) Normal-Duty
(If the Vehicle Meets Any of These Conditions)	(If the Vehicle Meets Both of These Conditions)
Average fuel economy is less than 2.98 km/liter [7.0 mpg], or idle time is 40 percent or greater, or vehicle operates in dusty areas, or gross vehicle weight is greater than 27,215 kg [60,000 lbs].	Average fuel economy is greater than 2.98 km/liter [7.0 mpg], and gross vehicle weight is less than 27,215 kg [60,000 lbs].
Vehicle uses the severe-duty oil drain interval (A).	Vehicle uses the normal-duty oil drain interval (B).
(A) Severe-Duty	(B) Normal-Duty
14,500 km [9000 mi], 500 hours, 6 months, or 7571 liters [2000 gal] of fuel, whichever occurs first	24,000 km [15,000 mi], 500 hours, 6 months, or 7571 liters [2000 gal] of fuel, whichever occurs first.

Table 2: Oil Drain Intervals

Refuse Truck, Mixer, or Dump Truck	Kilometers	Miles	Hours	Months
Below 10 mph Average	4850	3000	500	6
10 to 15 mph Average	9650	6000	500	6
15 to 20 mph Average	13,700	8500	500	6
20 to 25 mph Average	14,500	9000	500	6
Higher than 25 mph Average	19,000	12,000	500	6

Table 3: Oil Drain Intervals

Shuttle or Transit Bus	Kilometers	Miles	Hours	Months
10 to 15 mph Average	9650	6000	500	6
8 to 10 mph Average	8050	5000	500	6
6 to 8 mph Average	6450	4000	500	6
4 to 6 mph Average	4850	3000	500	6
2 to 4 mph Average	2400	1500	500	6

Table 4: Oil Drain Intervals

Vehicle or Equipment	Kilometers	Miles	Hours	Months
Recreational Vehicle (ISC)	24,000	15,000	500	12
Recreational Vehicle (ISL)	32,000	20,000	500	12
Truck Crane	14,500	9000	500	6
Yard Spotter	14,500	9000	500	6
All Others	14,500	9000	500	6

Cummins Inc. bases the oil drain specifications on duty cycle and oil contamination. This contamination occurs in all engines at varying rates regardless of design.

Maintaining the correct oil and filter change interval is a vital factor in preserving the integrity of an engine. Filters **must** be changed when the oil is changed.

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